

Goliath Stick  
Insect - female  
*Eurycnema goliath*

# Butterfly & Other Invertebrates Club Inc. Newsletter

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## CLUB PLANNING AND ORGANIZING GROUP - 2007

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## PLANNING AND ORGANIZATION MEETINGS

A quarterly meeting is scheduled in order to plan club activities and the newsletter.  
See BOIC Programme.

## CONTACT ADDRESS AND MEMBERSHIP DETAILS

PO Box 2113, Runcorn, Queensland 4113  
Membership fees are \$15.00 for individuals and \$20.00 for families, schools and organizations.

## AIMS OF ORGANIZATION

- To establish a network of people growing butterfly host plants;
- To hold information meetings about invertebrates;
- To organize excursions around the theme of invertebrates e.g. butterflies, native bees, ants, dragonflies, beetles, freshwater habitats, and others;
- To promote the conservation of the invertebrate habitat;
- To promote the keeping of invertebrates as alternative pets;
- To promote research into invertebrates;
- To encourage the construction of invertebrate friendly habitats in urban areas.

## NEWSLETTER DEADLINES

If you want to submit an item for publication the following deadlines apply:

March issue – February 21 <sup>st</sup>	June issue – May 21 <sup>st</sup>
September issue – August 21 <sup>st</sup>	December issue – November 21 <sup>st</sup>

## COVER DRAWING

Goliath Stick Insect, *Eurycnema goliath* - Female by Lois Hughes



## FROM THE PRESIDENT

On April 1<sup>st</sup> the Club had a display at Merri Merri Park, Chapel Hill in conjunction with the Cubberla-Witton Catchments Network and Brisbane City Council's Habitat Brisbane. The enthusiasm and very effective efforts of Jutta Godwin and her team were inspiring while the dedication of Habitat Brisbane staff could not fail to impress those who attended.

Those members able to attend the Redlands Indigi Day Out on June 2<sup>nd</sup> and 3<sup>rd</sup> last could not have failed to be impressed by the BOIC display. It certainly attracted a lot of interest from the general public. Special thanks are due to Daphne Bowden, Lois Hughes, John Moss and Peter Hendry who set up and "manned" the site for two days. It is a wonder that John Klumpp kept his voice after two days of talking about stingless bees, such was the interest in his excellent set up. Thanks John.

Those of us who attended the planning meeting on Saturday May 12<sup>th</sup> agreed that we should continue the practice of weekend meetings. We were able to have a more free ranging discussion of agenda items with time constraints being less of an issue. Thanks to Beverley Hendry for a delicious afternoon tea.

Our next planning meeting on Saturday August 11<sup>th</sup> at Sheldon is to be followed by a BYO barbeque and the screening of butterfly videos. (continued on page 4)

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**From the President** continued from previous page.

I am sure you will find the articles in this edition of the Newsletter of interest. We are indebted to the various members for their contributions. Lois's drawing of a stick insect on the cover gives a clue as to what will follow. Thanks are due to Phasmid expert Paul Brock for his article. We are grateful to Patrick Honan of the Melbourne Zoo for his article and pictures. The continuing story of the rescue of the Lord Howe Island Stick Insect will endure in the history of the fight to restore habitat and to reverse the trend towards the extinction of many living organisms. **Ross**

PRESIDENT'S REPORT FOR AGM 29 <sup>TH</sup> APRIL 2007
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I thank the members of the management committee for their support over the past year. Their experience has allowed me to fit rather seamlessly into the organization. John continues to make a great contribution with his enthusiasm and depth of scientific and practical knowledge. I call Daphne our "sheet anchor" as she calmly responds to contacts from both members and non-members, maintains our membership register, edits and produces and mails out our quarterly newsletter and supports the running of our outdoor displays. Peter and Rob perform their roles with quiet efficiency while both Janet and Alicia are often on hand to lend cheerful support for displays and trips. Special thanks must be given to Lois for her continuing support especially in the form of her artwork.

Thank you to the many members who have contributed to our newsletter in the last year. This newsletter is the major point of focus for most of our members and new articles are always welcome.

I do not propose discussing all the displays and outings held in the last year but do thank all those who supported them. Drought has meant that some venues were rather bereft of insects when we visited them but most of us gained new information anyway. We would welcome suggestions from members with new ideas for club activities.

After due consideration, the club returned monies granted by the Brisbane City Council to support the Bug Eyed program primarily developed by Helen in 2005. Unfortunately, there was no one to "run" with the concept after Helen became unavailable to do this.

As mentioned in newsletters, we succeeded in getting the Brisbane City Council to approach the lopping of mistletoes and the removal of host trees in a manner that accepted their importance in biodiversity. I found that my request for members to respond to a survey of mistletoes in their area was met with a somewhat underwhelming response and as result I am working to produce a small, illustrated handbook on our local mistletoes.

I look forward to your participation in the club's activities in the coming year.

**Ross Kendall**





## The Goliath Stick Insect, *Eurycnema goliath* Gray 1834

I had the privilege recently to enjoy an encounter with a Goliath Stick Insect spotted in a guava tree at our place. Never having seen one before I put it in a cage to observe at close quarters and the first thing I realized was that its diet did not include guava leaves.

During my search for information I discovered some very interesting facts about Stick Insects. It belongs to the Order Phasmatodea of which there are about 150 Australian species. Their common name, Stick Insects, is an apt description, as many resemble sticks and leaves.

These insects mostly live in the tree tops, are herbivorous at all stages and are remarkably camouflaged, even their movements mimicking leaves or twigs swaying in the wind so that they are largely unseen by humans. Usually they only come to our attention when out of their normal environment, having been dislodged by strong winds, dropping to the ground and playing dead when attacked by predators or being found dead on the ground. Other inhabitants of their leafy environment prey upon them and these include birds, small mammals and reptiles. All phasmids are also susceptible to predation by fly and wasp larvae.

A peculiar characteristic of some phasmids is that a female can still produce fertile eggs without having mated, but her eggs will produce only females. A mated female will produce both male and female offspring which are called nymphs. Nymphs moult several times before reaching maturity and this process can vary between weeks or months.

Depending on the species a female can lay between a hundred or a thousand eggs, many simply being dropped to the forest floor to lie amongst the leaf litter, some for up to 3 seasons. Others, however, lay them in the soil or glue them to the substrate.

Newly hatched nymphs must crawl from the ground up tree trunks and are vulnerable to attack by large ants and other predators. Because the eggs resemble seeds, some ants carry them to their underground larders, which does give them protection from forest fires, but some are eaten by the ants.

*Eurycnema goliath*, as the name suggests is large and heavy bodied. The male has a body length between 121-146 mm, the female 172-220 mm and there is much



Egg of *Eurycnema goliath*  
Photographed with permission from  
CSIRO's Insects of Australia



variation, not in size only, within this species. Females of this species are fully winged but are capable only of weak, “gliding and flapping” flight. The males must fly to the females to mate.

I found Mike Groth’s “Teaching Tips” on Keeping and Rearing Sticks Insects in newsletter no. 6 of June 1997, very helpful. There is valuable information in all our previous newsletters. They are well worth purchasing as we have tried to present fresh, new data each issue, never re-printing previous articles, which is quite remarkable over 11 years and 44 newsletters!

Following this advice I collected small branches of eucalyptus leaves with old and new growth and was relieved when it began hungrily devouring them. I soon realized it was a female as she began dropping eggs amongst the frass, which was just long and black. The eggs resembled seeds and are about 4 mm long and 3 mm wide, brownish, with lighter distinct markings and are pitted, looking like bark.

The insect is quite spectacular (my specimen was 185 mm long) being strikingly patterned in bright green and yellow with very spiny legs. The fat green abdomen is segmented and encircled with creamy yellow and pinkish red bands. When feeling threatened she would raise herself up, lifting the small wing covers and fanning out her beautiful shining wings and exposing the red undersides, as she kicked out with her back legs. Quite a formidable performance!

Several days after finding the large insect, I found a smaller version, but without the striking patterns and colours of the former. This one had beautiful purplish wings. What a fascinating world we live in. I’m looking forward to my next discovery!

*Lois Hughes*

Ed. Note – I have received the following comment from Martyn Robinson.

“Goliath Stick Insects don’t normally feed on guava as many species can include guava in their diet even though it is a species not normally found in their normal distribution. Similarly Spiny Leaf Insects will eat oak, privet, *Prunus*, rose, and blackberry which are also not part of their normal diet. I’d also say that the second stick insect Lois found was a different species as the males are like a smaller skinnier version of the females. Re the ‘flight’ of females it’s more of a controlled flutter to the ground if they fall out of the canopy (I’ve heard it described as “falling with style”) – they can’t fly upwards but the males can fly very well (as mentioned). The nymphs are grey and stick like right up until their final moult when they go green and stripey.”

## NEW HOST PLANT RECORD

**A new foodplant for *Rapala varuna* (Horsfield) (Lycaenidae).**

**by Murdoch De Baar.**



*Alectryon tomentosus* (Sapindaceae) is here recorded for the Indigo Flash (*Rapala varuna*) extra to Braby (2000) and Moss (2005).

Two larvae of *Rapala varuna* were found on *Alectryon tomentosus* and fed on the foliage during Aug. and early Sept. 2005 at Corinda, Brisbane. Larvae fed on buds and fresh foliage (see attached photograph), and one adult emerged 24 Sept. 2005.

#### References

Braby, M.F. 2000. Butterflies of Australia, their identification, biology and distribution. CSIRO Publishing, Collingwood, Vic.

Moss, J.T. 2005. Butterfly host plants of south-east Queensland and northern New South Wales. Butterfly and other Invertebrates Club Inc., Runcorn, 52 pp.



*Rapala varuna* larva on  
*Alectryon tomentosus*  
Photo Murdoch de Baar

#### ITEMS OF INTEREST

**Note on new Evening Brown butterfly (*Melanitis leda*) hostplants and clarification of the correct name for the *Carex* hostplant of the skipper butterfly the Southern Sedge-darter (*Telicota eurychlora*).**

It is well known that the Swordgrass Brown butterflies feed on native sedges (*Gahnia* species). These plants, strictly “Sawsedges” in the family Cyperaceae, are often colloquially referred to as “Swordgrasses” because some (eg. *G. sieberiana*) have large emergent inflorescences. Thus the origin of the butterfly’s common name.

A few others of our satyrids “brown” butterflies also feed on sedges as well as on grasses (family Poaceae) e.g. Banks’ Brown (*Heteronympha banksii*) and the Brown Ringlet (*Hypocysta metirius*). The Bright-eyed Brown (*Heteronympha cordace*) normally oviposits on and matures on sedges, especially *Carex appressa*, but larvae can be artificially induced to eat some grasses and even go through to maturity on them (Common and Waterhouse, 1981).



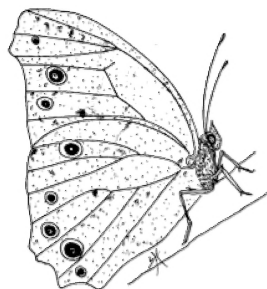
One Tasmanian brown, *Nesoxenica leprea*, feeds exclusively on a sedge and will not survive if fed on grasses (Couchman 1948, in Braby 2000). However, by far the majority of browns feed only on grasses.

Until recently it had been thought that the common Evening Brown butterfly (*Melanitis leda*) only fed on a suite of native and exotic grasses. In the late 1900's, on one of my earlier visits to Stony Creek Falls in the lower Conondale Range north of Woodford, I made a chance discovery of a live pupa of *M. leda*, attached to an arching leaf of the sedge *C. appressa*, sometimes referred to as "Tall Sedge".

This sedge was growing side by side with a related species *C. polyantha*. At that time I couldn't be sure if the butterfly larva had fed on a nearby grass and crawled on to the sedge to pupate, or if the sedge was indeed its hostplant.

On that occasion I was trying to establish the hostplant sedge of the skipper *Telicota eurychlora* and did indeed find *Telicota* species larvae on this latter sedge, which at the time was misidentified as *C. gaudichaudiana*, and as such appears in Braby, 2000.

Subsequently I found both larvae and pupae of *M. leda* on *C. polyantha* at that site, and within the same time frame found larvae on potted specimens of both *C. appressa* and *C. polyantha* growing in and around my fishpond at Capalaba. These larvae all went through to adult butterflies.



Evening Brown (*Melanitis leda*)



Southern Sedge-darter (*T. eurychlora*)  
Photo Frank Jordan

Frank Jordan in his timely article on the Southern Sedge-darter (*T. eurychlora*) [B.O.I.C. newsletter No. 44 March 2007] confirmed the initial observations of *Telicota* larvae (on this sedge) that we made at Stony Creek. He successfully reared one specimen through to maturity on *C. polyantha*.

Whether *C. gaudichaudiana* will prove to be a valid hostplant for either or both the Evening Brown and the Sedge-darter remains to be seen. This could be quite a

challenge, for the butterflies are generally found on the coastal plain, whereas the



sedge in southern Queensland and northern New South Wales prefers moist creek-lines and swamps at elevated sites along the eastern Great Dividing Range and adjacent Western Slopes.

Further observations may elucidate more sedge feeders amongst our “brown” butterflies – there are still many mysteries to unravel even amongst our more common species.

**John T. Moss**

References: Common, Ian and Waterhouse, Doug (1972 and 1981 eds.)  
Butterflies of Australia.  
Braby, Michael (2000) Butterflies of Australia : their Identification,  
Biology and Distribution.

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### **A note on Richmond Birdwings and *Aristolochia acuminata***

The natural host plants of the Richmond Birdwing, *Ornithoptera richmondia* (Gray, [1853]) are *Pararistolochia laheyana* and *Pararistolochia praevenosa* (Aristolochiaceae) however captive specimens have been bred successfully on the tropical *Aristolochia acuminata* which has been previously known as *Aristolochia tagala*.

Holders of the appropriate Wildlife Farming Licence issued by Queensland Environmental Protection Agency may breed Birdwing butterflies in captivity. Several of these breeders use both *Pararistolochia* and *Aristolochia* to feed *O. richmondia* larvae. They have found that females will oviposit on both plant types but that hatching rates are a little lower on *A. acuminata* probably due to a reaction by the plant to the presence of the egg. Most breeders collect fresh eggs daily and hatch them in Petri dishes before introducing the larvae to the host plant. They prefer to use *A. acuminata* as the host plant because of its vigorous growth and the better palatability of the older leaves but transfer last instar larvae to *P. praevenosa* as the greater roughage of its leaves appears to make it easier for the larvae to purge their gut before pupation. A least one breeder had a high rate of successful pupation on larvae fed exclusively on *A. acuminata*.

It has been suggested that the feeding of *O. richmondia* larvae on *A. acuminata* may cause reproductive problems in further generations but, from stock obtained two years ago, one breeder has now raised several generations.

The generally held view is that the re-establishment of wild habitat for *O. richmondia* is best served by the planting of local species of host plants. There is no prohibition on the planting of *A. acuminata* in home gardens.

**Ross Kendall**



## Update on Jezebel Nymph (*Mynes geoffroyi*) featured in Newsletter No. 41, June 2006

It is twelve months since I excitedly released fifty-eight butterflies from the first batch of caterpillars unexpectedly discovered on Native Mulberry, *Pipturus argenteus*, in early April 2006, the first appearance for 5 years.

Since then I have released over 200 butterflies and was hopeful a permanent breeding colony would establish in this locality.

On 13<sup>th</sup> December 2006 I released 34 individuals, predominately female (from eggs collected 27<sup>th</sup> October 2006) none of which appeared to remain in the area. This was unusual, with no subsequent sightings or eggs found after that.

However my faith was rewarded with the discovery of eight, almost mature, caterpillars on the smaller of our *Pipturus* trees on 25th March 2007. (These pupated within days, two of which produced Tachinid flies, the rest, emerging, were released.)

Over the Easter break (April 6<sup>th</sup>-9<sup>th</sup>) during some strenuous work creek-side, I flopped down in the shade beneath the large *Pipturus* and was overjoyed to see a fresh batch of Jezebel Nymph eggs. Before the day was over, three more batches had been found.

Since then many more eggs have appeared and been brought inside to be hand reared and given away, some having hatched, being left on the *Pipturus*. Several batches of empty egg shells have been found, presumably robbed by spiders or ants. I believe it has been worthwhile to hand rear and release this species so that the numbers can build up and hopefully range further afield.

I had seen a single butterfly making brief morning visits but couldn't positively identify it, seeing only its upper wings, which were white with a black border. It could have been one of several other species which frequent the area, but the presence of eggs eventually confirmed her identity.

What was surprising with this species was that it continued its lifecycle right throughout winter, the cycle taking longer to complete than during the warmer months.

The hungry caterpillars are now happily doing their thing with the first batch of 77 growing rapidly and with other subsequent batches all at different stages, its going to be a productive and fulfilling time again.

It's been an amazing season for all species of butterflies here at Tingalpa Creek, Mt. Cotton, with several sightings of the Purple Crow, which has been absent for some time, being particularly pleasing.

*Lois Hughes*



## Australian stick and leaf insects

Whilst the rainforests of tropical Queensland are *the place* to be in Australia for spectacular stick insects (known as phasmids), one may casually encounter wingless or winged species almost anywhere, or seek them on collecting trips.

For the taxonomist, phasmids are quite a challenge. In Australia, there is an unusually wide range of size and variation within some species; in part, this can be linked directly with conditions, also selected host food plants (in extreme cases specimens may be little more than half normal length of the species). The male of *Onchestus rentzi* from north Queensland has a large pair of spines at the back of its head, but just a few days ago a specimen was found, completely lacking this normally key feature.

So how does one find phasmids, known masters of camouflage? They may find you, sometimes appearing on doors or fences in gardens, or may blow down from vegetation. An employee from Taronga Zoo, Sydney discovered an attractive phasmid earlier this year (*Podacanthus viridiroseus*), merely by collecting eucalypt leaves as food for phasmids already on display. This species is normally seldom reported, but has cropped up in several unexpected localities this year. True leaf insects are particularly scarce and so far only reported from north Queensland. I know of a *Phyllium monteithi* female found on the ground after a cyclone, but normally only males are seen, attracted to light. Most entomologists encounter few phasmids in the daytime, but search hard and one may spot some, particularly around the tops of *Acacia* and *Eucalyptus* saplings, popular with many species. Try suitable forests or bush and ignore huge trees to start off with, specialist techniques are needed for these! Check the vegetation methodically, looking for evidence of feeding i.e. large circular bites from the leaf margins and an odd shape. With luck one will spot a phasmid. Some phasmids may not rest on food plant leaves or branches. In dry grassy areas remarkably thin stick-like species (currently known as *Hyrtacus*) may be common. The only place I have seen a good number of these is in N.T. near Darwin, in advance of a bush-fire. Phasmids (and other insects) rapidly move to escape the flames.

If you can, try collecting in potential sites at night, using a powerful torch-light (a head-torch leaves hands free), but beware of possible hazards. The phasmids one could not spot in the daytime now stand out near the edges of branches, feeding on leaves, or walking; in any event, they are a lot more visible. Initially check vegetation at up to about 3 metres, right down to the ground. Because little is known about food plants, try sampling a wide range.



Defensive behaviour is fascinating and several methods are employed by a number of species, including startle displays. The deep pink-winged *Parapodacanthus hasenpuschorum* is particularly stunning. Old favourites such as *Eurycnema goliath* were found at Brampston Beach, north Queensland in February 2006. The eggs of this and other species are attractive to ants, but even so, I was surprised to find a tiny ant removing a huge *goliath* egg, just seconds after being placed on the ground for photographing. This actually may help phasmids survive as the eggs will be removed to the ants nest, where only the cap will be eaten, leaving the nymphs to hatch from the capsule. Otherwise, eggs that remain on the ground may be eaten by predators. Buried eggs are also known to suffer reduced rates of parasitism by wasps. The strange appearance and behaviour of phasmids contributes to their popularity as 'pets' and there are several in-print books exclusively on rearing phasmids.

At the time of writing, I am working on a field-guide covering all Australian phasmids, jointly with Jack Hasenpusch (publishers: CSIRO Publishing) and will inform members when the book is published. The interest from entomologists has been encouraging and we have received assistance in many forms. As a preliminary step, an updated checklist of Australian phasmids will be published shortly in Zootaxa, correcting some of the present taxonomy, along with new species descriptions (including several from West Australia). Various genera and species will be listed as new synonyms, hence the final number of species (105) is the same as the last catalogue of species by Balderson et al (1998). More than half are recorded in Queensland. If you cannot wait until publication, numerous references are available on my taxonomic website Phasmida Species File <http://phasmida.orthoptera.org> as an example, go to Search – Taxon then key: *australis*, select *Dryococelus australis* and you will find several photographs and references.

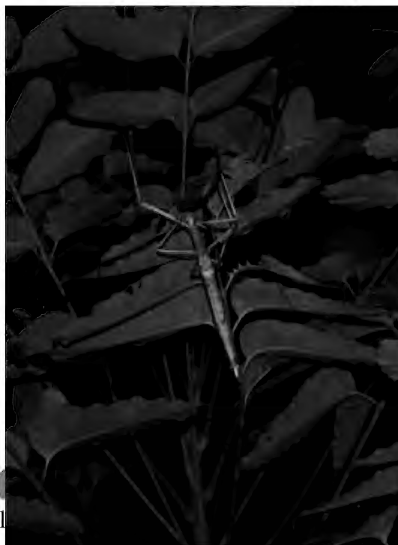
**Paul D. Brock (Slough, UK)**



←Figure 1 *Ctenomorpha marginipennis* a 150mm specimen found less than 1 metre from the ground, Feb. 2007

→  
Figure 2 *Acrophylla wuelfingi* a 200mm specimen, photographed by torch-light, February 2006 (north Queensland, Bellenden Ker), found just above head height.

Photos courtesy of Paul Brock





## Recovery of the Lord Howe Island Stick Insect

The Lord Howe Island Stick Insect (LHISI), *Dryococelus australis*, thought to have become extinct more than 80 years ago, was rediscovered in 2001 surviving in the most precarious of situations on Ball's Pyramid.

LHISIs have long been thought of as the Thylacines of the invertebrate world. Their large size, spectacular appearance and evolutionary significance has always drawn attention. They belong to an ancient group whose only other members occur in New Guinea, which has given them the nickname of 'Jurassic insects.'

LHISIs are large creatures that were once very common and well known to locals on Lord Howe Island. The stick insects became extinct on the island after the ship *Mokambo* ran aground and rats were released onto the island in 1918. The rats cleaned up not only the stick insects but also 15 species and subspecies of seabirds endemic to the island. Lord Howe Island is a small island (14km<sup>2</sup>), 700km northeast of Sydney. It is dominated by two large mountains at the northern end, which are tall enough to be covered in cloud forest. The rest of the island is covered with rainforest and palms.

### ***Ball's Pyramid***



Ball's Pyramid, rising to a height of more than half a kilometre from the sea, is the largest sea stack in the world. Lying 23km away from Lord Howe Island, it has always been a Mecca for rock climbers from around the world. There is nowhere to land a boat on the pyramid and getting on and off can take up to two weeks either way, depending on the weather and sea conditions. Getting onto the pyramid requires leaping from a boat onto the cliffs and climbing from there. There is no vegetation to speak of on the pyramid, except small groundcover plants and a small number of *Melaleuca* bushes. It is surrounded by very deep water, home to thousands of Galapagos sharks.

The pyramid had been scoured several times in the past for LHISIs. Dead specimens had turned up on two previous occasions in the 1960s but their origin was unknown. They

may have been transported from Lord Howe Island to be incorporated into nests by the thousands of seabirds that live on the pyramid. The burning questions arising



from the LHISI's rediscovery are how the stick insects came to the pyramid, how long they've been living there (at least 80 years), and how they've managed to survive in such a harsh environment.

### ***The stick insects***

The LHISIs grow to 15cm long and are one of the world's heaviest stick insects. Their large size is attributed to the lack of predators on Lord Howe Island before rats arrived, when they were apparently very common. Both sexes are nocturnal and flightless, shiny and reddish-brown to black, and the males are armed with strong spines on the hindlegs which give them a prehistoric appearance. Their large size gave them the local name of 'land lobsters.' On Lord Howe Island the stick insects sheltered in holes in Banyan Trees (*Ficus macrophylla columnaris*) during the day, but as there are no trees on Ball's Pyramid, we still have no idea where the surviving population shelter during the day.

### ***The rediscovery***

In February 2001, the NSW National Park and Wildlife Service undertook an expedition to search for the stick insects and, to their surprise, they found three specimens living on a small group of Melaleucas on the side of a cliff. There is almost no soil on the pyramid and no water, and the bushes were growing in a very precarious location on top of the only known water soak. It seemed possible that a severe storm could send the entire world's population over the cliff and into the sea.

### ***Into captivity***

Melbourne Zoo became involved in the project when the possibility of captive breeding arose after their rediscovery. I travelled to Lord Howe Island in



Black Beauty – male – sitting on their original daytime treat, which is a possum dray



Eve chewing a stem



February 2003 to collect four specimens; one pair to come to the zoo and a second pair to go to Insektus in Sydney.

Rangers from the Lord Howe Island Board climbed the cliffs at night in treacherous conditions. Seventeen stick insects were found on a few *Melaleuca* bushes. After descending the pyramid the next morning, the stick insects travelled to Melbourne and Sydney, and by the same evening were set up in their new homes.

A few days after establishing itself in the facilities provided at Melbourne Zoo, the female, named Eve, began laying eggs, then went into a spiral of declining health and stopped feeding. Attempts were made to restore her health but over several days she deteriorated further.

Nothing was known of the species' life history, so physical intervention was avoided because of the possibility of unforeseen side effects from any direct interference. X-rays and other diagnostic investigations were undertaken but nothing was obviously wrong.

She continued to decline and Melbourne Zoo vets launched a worldwide literature search and an appeal to any professionals from around the world with experience treating sick stick insects. None was forthcoming and, as she appeared to be knocking on death's door, a liquid concoction of glucose, calcium and *Melaleuca* leaves was fed to her under a microscope, drop by drop, over several hours during the night. Within an hour she was up and walking around, apparently back to full health. The same decline occurred with the female at Insektus in Sydney but unfortunately she did not recover. Eve went on to lay more than 250 eggs and lived for another year in captivity.

### ***The rebirth***

On 7 September 2003 the first LHSI egg hatched into a small green nymph. This, coincidentally, was Threatened Species Day as well as Father's Day. This was the first time in at least 80



Eggs of Lord Howe Island Stick Insect



Nymph on sand



years that nymphs had been observed and the first time that their appearance and behaviour had been recorded.

LHISIs at Melbourne Zoo are being kept under temperature and humidity regimes as close as possible to those of Lord Howe Island and are offered Melaleuca as well as Moreton Bay Fig, Tree Lucerne and Blackberry. They are also being trialled on a range of other plants as the current population is stressing our food supply. The original pair were intensively studied for the first month after arrival but, as the species is nocturnal, observations are now largely limited to health checks and inferences of behaviour. The eggs are buried in sand by the female and the nymphs emerge after 6-9 months. In order to collect as much data as possible, each egg is removed from the sand, weighed, measured and placed in a range of incubation media, under different moisture regimes.

In addition to their importance for conservation, LHISIs are a fascinating and challenging species to study. They are highly active and appear to be very aware of their environment; their behaviour and locomotion more similar to that of cockroaches than to other stick insect species. Males appear to be particularly aware of the presence and location of the females at all times, and demonstrate strong guarding behaviour when resting during the day. Behaviour varies significantly between adult pairs but intraspecific behaviour within pairs is remarkably consistent over time.

Developmentally, first and second instar nymphs are bright green and diurnal, becoming darker brown then black, and nocturnal, as they mature. Eggs will hatch regardless of their oviposition location, incubation conditions and medium.

### *The future*

The population in captivity has increased over the last four years and we are about to pass the 700 mark. This, somewhat ironically, makes them the most populous animal species at Melbourne Zoo (and possibly the most populous animal species at any Australian zoo other than feed insects). Many of them are now roaming freely in their own glasshouse at Melbourne Zoo, mixing genes and testing out new plant species.

They will remain in captivity until the rats can be eradicated from Lord Howe Island, and we are now in a position to pass live specimens on to other institutions and breeders to keep the population robust. Several zoos in the USA and Europe will be receiving specimens, and we are also looking to send them to private breeders in Australia. Please contact us ([invertebrates@zoo.org.au](mailto:invertebrates@zoo.org.au) or 03 9285 9457) if you are interested in receiving some, and I can forward you the husbandry manual. But be warned: they are not an easy species to keep; those that keep them will require considerable husbandry experience, particularly with stick insects; they are strictly nocturnal as adults; and their range of food plants is limited. This species has also



shown signs of inbreeding in captivity, so recipients must be willing to keep track of their lineage.

On Lord Howe Island, the NSW Department of Environment and Conservation, in conjunction with the Lord Howe Island Board, is conducting studies to eradicate the rats. This will be the largest rat eradication program ever undertaken, as well as the most complicated. A number of bird species on the island would possibly take rat baits or poisoned rats, and so must be rounded up and housed in a protected situation or temporarily removed from the island. It is pleasing to see an invertebrate species leading the way in a threat abatement program for the benefit of both the invertebrate and vertebrate species that have been affected by rats. Hopefully, in the next few years, the stick insects will be back on Lord Howe Island where they belong.

**Patrick Honan**

**Invertebrate Specialist, Melbourne Zoo**

Photos courtesy of Patrick Honan

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## **A Fascinating Phasmid**

This wonderful looking creature was found on my bush block west of Bundaberg by John Moss on one of our excursions to the dry vine scrub area. It turned out to be a Spiny Leaf Insect *Extatosoma tiaratum*. It was found on *Flindersia collina* which may or may not be a host plant as the only reference I could find regarding what they eat, said they eat gum leaves. Other web sites stated they were found in tropical and temperate rainforests, grassland and alpine areas, so I would assume they don't only eat gum leaves.

The photo is probably a female as they have underdeveloped wings and do not fly, whereas males have large wings and fly readily when disturbed. It is believed that the females live up to 18 months while the males only last 6-8 month.

Like other stick insects the females lay their eggs by flicking them onto the ground. The eggs have a knob called a capitulum which attracts ants that collect them and carry them



Spiny Leaf Insect *Extatosoma tiaratum*

Photo by Peter Hendry



to their nest. The young take 1 to 3 years to emerge and appear to mimic ants of the genus *Leptomyrmex*. They move out of the ants nest and up into the trees to begin their adult life. **Peter Hendry**

## AT THE LIGHT TRAP

I finally bit the bullet and bought myself a mercury vapor light to attract moths. I designed the trap with photography in mind; it is basically a hanging sheet with a light bulb above. The sheet has all 4 side seams large enough for the support poles to pass through. Top and bottom poles are aluminum cut to the width of the sheet and the side poles are adjustable tent poles, the bottom pole screws to the base of the tent poles and the top pole has holes near its ends, which fit over the pointy bits of the tent poles. Holes were left in the side seams of the sheet to allow for the adjustment in height of the tent poles. This ensures a tight sheet and reduces the amount of movement caused by any wind that may be present. One of the difficult aspects of photography is the lack of depth of field (depth of focus) when dealing with small objects up close; any movement can blow the subject out of focus. I am indebted to my wife for her sewing skills and I must thank my brother who decided to buy himself a portable generator for our trips away. I suppose I must blame John Moss for introducing me to this addictive hobby in the first place.

As soon as the light trap was finished I set it up at home and was blown away by the numbers and diversity of moths that arrived. I had no idea all these moths were present in my acreage block. For the first week it went up every night, in spite of the fact I have to rise at 3:30am to go to work. I now restrict myself to Friday night only, which can carry over to Saturday morning.

Then the real fun begins, sorting out a few hundred photos! Fortunately many are duds and the delete button gets a working over. Now to identify them. "Hee hee", yes it can make you go silly! With over 20,000 moths in Australia and only about 10,000 named, many will remain in the unknown basket for a long time. The big difficulty is the lack of information available or affordable. The CSIRO continues to publish the "Monographs on Australian Lepidoptera" series, which I do not have access to and may find too technical anyway. One family of moths, the Oecophoridae which has over 2,000 species, is covered in 3 volumes costing around \$450, so it gets a bit expensive.

Like most amateurs I rely heavily on the 1991 classic *Moths of Australia* by I F B Common. Other books I have are the 1974 *Moths of Australia* by Bernard D'Abrera and the 1992 *Flying Colours* by Pat and Mike Coupar. The CSIRO have a magic web site "Moths on Line", <http://www.ento.csiro.au/gallery/moths/index.php> which is constantly being updated. Other useful sites include:



Don Herbison-Evans' Caterpillars of Australian Moths,

<http://linus.socs.uts.edu.au/~don/larvae/moths.html>

Ian McMillan's Creatures of the Night (moths from SE Qld )

<http://icmcmillan.tripod.com/>

Peter Chew's Brisbane Insects, [http://www.geocities.com/pchew\\_brisbane/](http://www.geocities.com/pchew_brisbane/)

Alan's Lepidoptera of Tasmania <http://www.tasleps.net/> and

Graeme Cocks' Lepidoptera of Townsville,

<http://gvcocks.homeip.net/Lepidoptera/lepidoptera.htm>

Another useful resource is the "All-Leps Barcode of Life" web site, which contains photos of Australian moths. It also has a checklist of Australian moths based on the Checklist of the Lepidoptera of Australia edited by ES Nielsen, ED Edwards, and TV Rangsi, and published by the CSIRO in 1996:

[http://www.lepbarcoding.org/cl\\_aust.php](http://www.lepbarcoding.org/cl_aust.php)

Now armed with all this information you can make a right fool of yourself, as some of the above web sites state that they are not professional entomologists and do not guarantee any of their identifications! The Checklist is out of date. For example one family, the Pyralidae, has been broken into two: the Pyralidae and Crambidae. Also some moths have had name changes and the CSIRO web site lists others described since the official Checklist was published. Similar problems occur with the books.

So with all that in mind, let's look at some of the wonderful creatures that turned up to the light trap. The first moth in was a member of the Eupterotidae family *Panacula lewinae* (Lewin, 1805). I have included the author and year the moth was named so you can see, that while this is a new moth to me, it's been known to science for some time. Possibly up to two dozen of these moths turned up the first night including both males and females. They have turned up every night that I have run the light trap here at Sheldon, Queensland. The males vary in colour and also the width of the band across the forewing can be broad to almost non-existent. Ian Common, in his book, mentions a "superficially similar species" *P pilosa*; it would now appear that these moths are recognized as one and the same *P. lewinae*. It is a silk bag moth with a wingspan of about 25mm. Its larvae live in silk bags amongst their food trees, which include *Eucalyptus*, *Lophostemon* and *Angophora*. The hairs of the larvae can cause skin rashes.



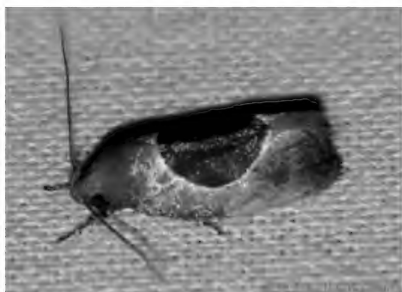


*Panacela lewinae* Male



*Panacela lewinae* Female

Another fascinating moth that turned up to my surprise was *Hoplomorpha abalienella*. I was first introduced to this moth when our club librarian, Janet Willoughby, showed me a photo she had taken at a light trap run by John Moss in the rainforest at Bellthorpe, north of Woodford, SE Qld. This small moth is a member of the large Oecophoridae family. It has a wingspan of about 12 mm. When at rest the pattern on its wings forms a circle. It was named by a British entomologist ( Walker, 1864 ) from a specimen collected at Moreton Bay. The larvae are known to eat the dead leaves of *Eucalyptus* sp.



*Hoplomorpha abalienella*



*Hoplomorpha abalienella*

While all moths are beginning to fascinate me, the Geometridae family is of particular interest. There are about 1300 Australian species in 6 subfamilies. This large family is represented on the CSIRO web site by images of only 97 species, with another 40 to 50 imaged on other web sites and in the books I have on hand. Thus it becomes a bit of a challenge to identify the moths I have photographed.





I have had visits from several members of the group known as Emeralds. These are green moths in the subfamily Geometrinae. With a wingspan of about 15mm, *Comostola laesaria* (Walker, 1861) is one of the smaller emeralds, but also one of the



*Comostola laesaria*



*Anisozyga insperata*

more spectacular. Other emeralds I have identified include *Anisozyga insperata* (Walker, 1861), *Anisozyga metaspila* (Walker, 1861), *Anisozyga pieroides* (Walker, 1861), *Eucyclodes buprestaria* (Guenée, 1857), *Prasinocyma albicosta* (Walker, 1861) and *Comibaena mariae* (T.P. Lucas, 1888). Well I could go on and on but will leave it for now! Just remember that these are my best attempts at identifying the moths pictured! If you disagree please let me know!!



*Anisozyga metaspila*



*Anisozyga pieroides*



*Eucyclodes buprestaria*



*Prasinocyma albicosta*



Foot Note: I have just received my copy of the recently published A Guide to Moths of Australia by Paul Zborowski and Ted Edwards. I am already finding it useful in identifying some of my photographs.

My preliminary impressions are –

Likes: The photos of live specimens help to match my photos

The brief description at the start of each family

Dislikes: The fact the Crambeidae family has been left out and included in the Pyralidae family as in previous publications (as the CSIRO web site now has them as two separate families).

Would like to have seen more photos, but combining this book with the CSIRO “Moths on Line” web site makes a powerful reference.

John Moss will review the book in our next issue.

Earthling Enterprises has a book offer accompanying this issue.

*Peter Hendry*

## MOSQUITOES

### **Facts with which to impress your friends at barbeques!**

**Leon Hugo and Jason Jeffery**

**Mosquito Control Laboratory, Queensland Institute of Medical Research**

#### **Introduction**

Mosquitoes can be quite rightly labelled as the ‘most dangerous animals in the world,’ earning this accolade because they are responsible for transmitting some of the most significant pathogens to afflict humankind, such as malaria, yellow fever, filariasis and dengue. They are immensely successful organisms and can be found on every continent (except Antarctica). Depending on the species, the larvae can survive and develop in saltwater, freshwater, rice paddies, rain-filled puddles (and hoof-prints!), old tyres, discarded tins, roof gutters, natural rock-pools, bromeliad leaf axils and tree-holes, to name just a few. They are adept stowaways, with some species being intercepted by Quarantine Officers in airplanes, in shipments of lucky bamboo and used-tyres, and on-board drinking water on fishing vessels. They have even brought massive engineering projects to grinding halts (e.g. the Panama Canal), forced the Ancient Romans to drain entire marshes, and, some speculate, may have even caused the mysterious death of Alexander the Great. Not bad for an insect that generally measures only a few millimetres across!

#### **Classification**

Mosquitoes make up the family Culicidae within the order Diptera, sub-order Nematocera. The family is divided into three subfamilies; the Culicinae, Anophelinae and Toxorhynchitinae. The largest subfamily, the Culicinae, is divided into several Tribes, including the Culicini, Aedini and Sabethini. Mosquitoes exhibit complete



metamorphosis, in that the juvenile form goes through both larval and pupal stages (Figure 1). The larvae and the non-feeding mobile pupal stage occupy aquatic habitats and are anatomically dissimilar to the free flying adults.

Australia is home to over 300 species of mosquitoes that exhibit a diverse range of morphological markings and behaviours. Far from all being a mundane black or brown, closer examination of many species often reveals striking banding patterns. Some species are even orange or iridescent purple!

### **Aquatic stages**

#### *Eggs*

Female mosquitoes can lay from 50 to 500 eggs at one time. Depending upon the species, these eggs are laid either singly or together in ‘egg rafts’ that are able to float on water surfaces. Some aedine species lay eggs that have waterproof shells and that can resist desiccation, remaining viable for years. Only when these eggs are inundated by rainfall or a high-tide event are the larvae stimulated to hatch. This is why mosquitoes can sometimes appear in such plague proportions.

#### *Larvae*

Mosquito larvae are fully aquatic, legless, possess a well-sclerotinised head and will moult four times. Their mode of life at this stage is dictated primarily by two things – respiration and food acquisition. For the most part, mosquito larvae breathe through a siphon, or tube-like structure, that is located towards the rear of their abdomens. These siphons can be relatively long (culicines - allows the larvae to hang downwards from the water surface), very short (anophelines - forces the larvae to lie horizontally beneath the water surface), or modified into a saw-like appendage (two culicine genera - enables the larvae to pierce the stems and roots of aquatic vegetation to obtain oxygen, ridding them of the need to come to the water surface at all). Since most mosquito larvae do not live in water bodies that have natural water currents flowing through them, they are unique in that they are able to generate small water currents with their mouth brushes. This essentially brings their particulate food to them (bacteria, algae, decaying plant detritus etc.).

#### *Pupae*

Mosquito pupae are still aquatic. The head and thorax of the larvae become fused and is now called a cephalothorax, whilst the abdomen has become curled and sports two strong paddles at its distal end. The pupa thus resembles a ‘comma’ and is highly mobile. The role of the larval siphon for respiration is now taken over by a pair of respiratory ‘trumpets’ on the dorsal surface of the cephalothorax. The hydrophobic rims of these trumpets, along with a trapped air bubble within the pupa, provides buoyancy. During this pupal phase (which, depending on temperature, lasts one to



two days) some of the larval organs are destroyed and replacement adult organs constructed. Once the adult is fully-formed within the pupal cuticle, the insect rests at the water surface and begins swallowing air until pressure causes the pupal cuticle to split. The adult then slowly expands out of the pupal case onto the water surface.

### *Adults*

The adult stage of the mosquito is highly developed for both dispersal and reproduction. The flight capacity of the different mosquito species ranges from within a hundred metres from the place of adult emergence to tens of kilometres. Females of the saltmarsh mosquito *Aedes vigilax*, for example, have been collected 64 kilometres inland from the nearest known coastal saltmarsh.

Most people would be ‘painfully aware’ of the bite of a mosquito, but possibly less aware that it is only the adult females that bite. The sole purpose of taking a blood meal is to obtain the proteins required for the development of eggs (a process called anautogeny). Both male and female mosquitoes can sustain normal life spans if maintained on a sugar-only diet (sugars normally being obtained from plant juices) although reproduction is halted without the obligatory blood meal. The proboscis of the female is perfectly engineered for this purpose; an outer sheath (the labium) encloses a combination of needle-like ‘stylets’ that rasp into the host and provide two channels that separately provide for the injection of saliva into the host and the uptake of blood. The sensory system of the female is also highly developed for seeking out suitable hosts, and responds to carbon dioxide from host breath, the host form and probably various chemical components of host perspiration, including lactic acid. Peak times for mosquito feeding usually occur around dawn or dusk.

However, the insect world is full of exceptions to the rule, and the females of certain mosquito species are capable of developing one, or multiple, egg batches without blood (called autogeny). In this case, the proteins from egg development are stored from the voracious appetites of the larval stages. The saltmarsh species, *Aedes vigilax*, can develop the first batch of eggs without blood, thereafter requiring blood as usual. However, females from the subfamily Toxorhynchitinae feed only on plant juices. Another fascinating fact about this subfamily is that, as larvae, they are predatory on other mosquito larvae!

### **Commonly found species**

While accurate identification of species usually requires observation of tell-tale characteristics under a microscope or more sophisticated molecular testing, a few of the more common species may be recognised by eye. The most commonly encountered species in coastal regions is *Aedes vigilax*, a mid-sized mosquito with golden banding on the upper half of the proboscis and offset banding on the side of the abdomen (Figure 2). Areas close to temporary to semi-permanent pools are prone to *Culex annulirostris*, a mid-sized light-brown mosquito with banded legs (Figure 3).



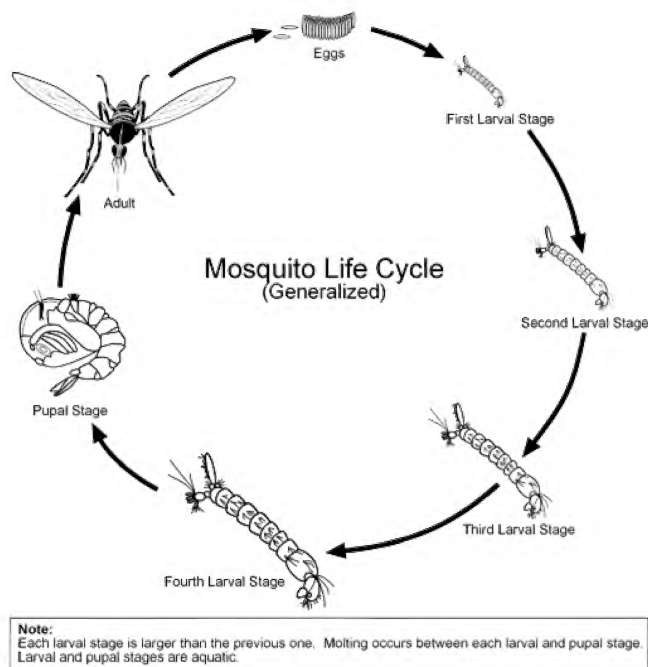
*Aedes notoscriptus* is a small to mid-sized black mosquito with striking white markings, including a single central white band on the proboscis and banded legs (Figure 4). It is predominantly an urban species with larval preferences for human made water-holding containers.

While malaria is not endemic to Australia, several Australian mosquitoes can transmit arboviruses responsible for debilitating illnesses such as Ross River virus disease and dengue fever (for more information, see <http://www.arbovirus.health.nsw.gov.au/> and <http://www.health.qld.gov.au/dengue/>). So, while keeping in mind that the bites of mosquitoes are definitely to be avoided, hopefully you can now appreciate some of the more unique and intriguing aspects of mosquito biology.

### Bibliography

**Clements, A. N. 1992.** The Biology of Mosquitoes, Vol 1. Development, Nutrition, and Reproduction. Chapman and Hall, London.

**Lee, D. J., M. M. Hicks, M. Griffiths, R. C. Russell, and E. N. Marks. 1984.** The Culicidae of the Australasian Region. Commonw. Inst. Health Monogr. Ser. 3: 207-233.



**Figure 1.** Mosquito life cycle.  
Illustration designed by Scott Charlesworth with support from Catherine Hill and John MacDonald, Purdue University, Indiana.



Figure 2. The saltmarsh mosquito – *Aedes vigilax*. Photo courtesy of Dr Stephen Doggett of the Department of Medical Entomology, Institute of Clinical Pathology and Medical Research (ICPMR), Westmead Hospital, NSW.

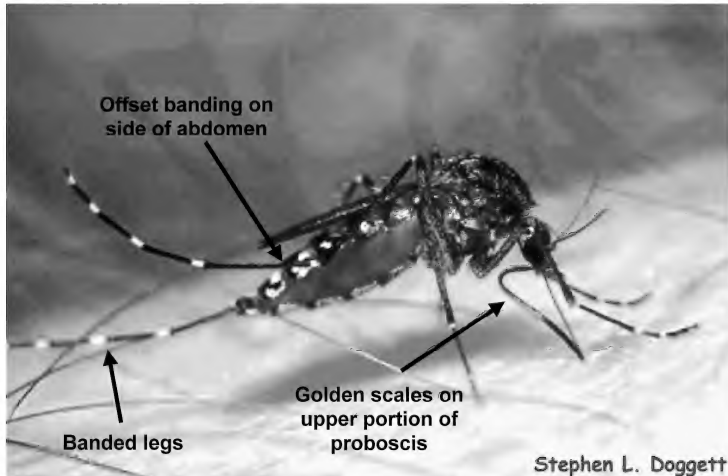


Figure 3. The fresh-water mosquito *Culex annulirostris*. Photo courtesy of the Department of Medical Entomology, Institute of Clinical Pathology and Medical Research (ICPMR), Westmead Hospital, NSW.

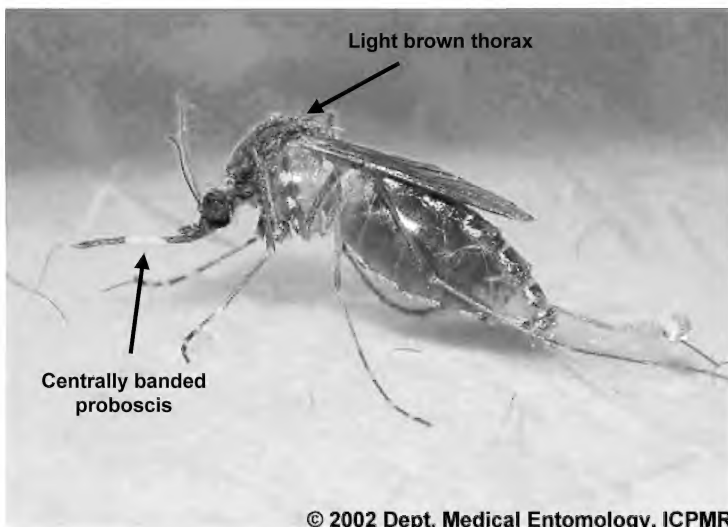
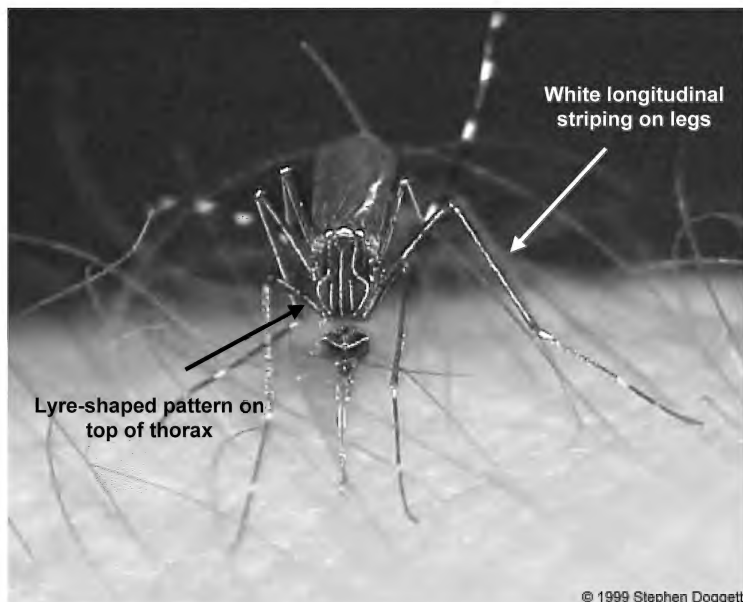


Figure 4. The container-breeding urban mosquito, *Aedes notoscriptus*. Photo courtesy of Dr Stephen Doggett of the Department of Medical Entomology, Institute of Clinical Pathology and Medical Research (ICPMR), Westmead Hospital, NSW.



## AUSTRALIAN NATIVE BEES #10

### The Stuff of Bee Nightmares

I have decided to depart from my usual practice of condensing sections of my forthcoming book into items for the Newsletter. Instead, in this issue, I intend to relate some developing news on the Australian Stingless Bee scene. A less conservative publication might claim this as an exclusive report accompanied by the world's first photographs of a newly revealed little horror for stingless bees, but I must emphasise that it does not purport in any way to be a scientific account of the discovery. It has been written from the viewpoint of a layperson who was fortunate enough to be able to assist with the collection of specimens and thereby be associated with some of the real experts currently classifying this creature.

If we can transpose our human emotions onto stingless bees for a moment it is easy to imagine that they have a certain *joie de vivre* as they move busily amongst our flowers, collecting nectar and pollen, on sunny days. However, life is not all



sweetness and light for these little bees. When you are tiny and relatively defenceless in the insect world, your chances of surviving to a ripe old age and dying of natural causes are pretty slim. Apart from the natural cycle of floods, fires and droughts that are a feature of our bushland and which can threaten the whole bee colony, there are innumerable spiders, lizards, birds and predatory insects all too ready to snatch you from this mortal world. But extending the human analogy to the bees just a little longer we have now discovered there is one creature that stands out above all these others as the stuff of their nightmares.

Several years ago Dr Anne Dollin of the Australian Native Bee Research Centre (ANBRC) received reports of an internal parasite of stingless bees and asked beekeepers to keep an eye open for evidence of this creature. Given the small size of stingless bees any parasite that lived within their bodies was always going to be difficult to detect with the naked eye. However, late last year Ms Ros Gloag, while researching the fighting behaviour of stingless bees at Sydney University, confirmed the existence of this parasite in no uncertain manner. During a visit to Brisbane to collect samples from stingless bee fighting swarms, Ros not only observed the larval form of the parasite emerging from the abdomen of a worker bee, but she was also able to record the entire event on video.



Could this tiny colourful *Braconid* wasp be a stingless bee's worst nightmare?

I was fortunate enough to be amongst the first few people to view Ros' brief video. It prompted me to increase surveillance of my own bees, and just a day or two later while inspecting a flightless bee with a distended abdomen; I too witnessed the emergence of a similar whitish coloured larva. The worker bee remained active, but flightless, after 'giving birth' to the larva, but died within a couple of hours afterwards. While my bee was apparently rendered flightless by the debilitating effects of the larva or by its sheer weight, this is not always the case. Ros reports that her parasite specimens were collected from bees that were still actively flying.

Neither Ros, Dr Tim Heard nor myself were able to raise the grubs to adulthood, however suspicion fell upon a tiny winged creature seen 'stalking' returning foragers and guard bees at the entrance of some *Trigona carbonaria* colonies. Ros was later able to confirm by DNA sequencing techniques that the grubs were indeed the larval stage of this small insect.





This creature appears to patiently and cautiously approach on foot any bee that strays a little from the hive's entrance. When it finally finds one that presents an opportunity for ambush it brings its abdomen and ovipositor around beneath itself in order to quickly deposit its egg. Even with my best spectacles on I cannot determine if it lays an egg onto the surface of the bee's abdomen or injects it into its abdominal cavity.

What does seem apparent is that the resultant larva develops within its host's abdomen to the extent that it occupies almost the entire abdominal cavity of the bee just prior to its emergence. I suspect that all afflicted bees die as a result of the parasite, but this has not been scientifically established. Immediately upon leaving its host the larva moves off actively, seeking a suitable place to undergo metamorphosis. It is believed this takes place in the soil rather than within the hive.



The photograph on the left, which shows part of a ruler with millimetre divisions and the one on the right which includes a *Trigona carbonaria* worker bee puts the size of the tiny *Braconid* wasp into perspective.

Specimens of the adult insect were provided to Dr Chris Burwell, Senior Curator (Entomology) of the Queensland Museum. Initial indications were that it was a species of *Braconid* wasp and subsequent consultation with Dr Scott Shaw of the USA confirmed this classification. While an official description of the species is currently in preparation by Ros Gloag and Drs Scott Shaw, Chris Burwell and Tim Heard, I understand that this tiny insect has been confirmed as a new species belonging to the subfamily *Euphorinae* (a group of endoparasites that specialise in adult hosts). It belongs to the genus *Syntretus* and is believed to be the first member of this genus collected from Australia.

These tiny wasps, while obviously not common, may be more prevalent than we initially believed. I recently delivered 10 specimens to the Queensland Museum, including one that might be the male of the species. All were collected within a 3



week period from the front of just one *Trigona carbonaria* colony that had deposited an extraordinary amount of soft, sticky resin around its entrance. This had reached the point where it was dripping down the front of the hive and I couldn't help wondering if anxious bees within were aware of the horror waiting just outside their front door and had constructed this sticky barricade as a desperate defence against their worst nightmare.

**John Klumpp**

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## **A teeny weeny bee**

Most people are surprised to learn that there are over 1500 species of native bees in Australia and wonder why they haven't seen many of them. One of the reasons is that many of these bees specialize on different types of flowers and when the native vegetation is cleared their food sources disappear. Another reason is that many bees



Bee (approx. 2-3mm long) on beach oxalis  
(*Oxalis rubens*)

nest in borer holes in dead wood or in holes made into the soil. Excessive tidying up of dead wood and sheet mulching of the ground deprives these bees of their homes.

However, another reason is that many of these bees are quite small and are just overlooked. Just how small they can be was impressed on me when I was looking at the flowers of the beach oxalis (*Oxalis rubens*). The tiny speck climbing about inside the flower turned out to be a small bee. It was dark coloured but with an iridescent green sheen

and collected its pollen underneath its abdomen instead of in pockets on its legs as does the European honeybee.

I checked out other small flowers in my garden and found it collecting pollen from *Portulacca australis* and also the Crenate Fanflower (*Scaevola albida*). A small patch of the Fanflower about 80cm in diameter had about ten of these bees flying around it. So keep growing lots of different native flowers and keep a magnifying glass handy!

**Frank Jordan**

Ed. note – I asked Dr. Anne Dollin from the Aust. Native Bee Research Centre - <http://www.aussiebee.com.au> - if she could identify Frank's bee. She made the following comment.



“You really can't id a bee from a description like this. However, it sounds rather like a *Homalictus* bee in family Halictidae. Their main pollen storing hairs are under the abdomen rather than on the legs and many have surprisingly pretty metallic colours when you look at them through a lens. They look like tiny jewels. Leafcutter and resin bees also carry pollen underneath the abdomen but many are black with pale hair bands.”

## HOSTPLANT UPDATE

This column begins a series of amendments to our publication “Butterfly Hostplants of southeast Queensland and northern NSW” – otherwise known as the “Green Book”. This was last revised and expanded in April 2005.

The main objective of this project is to keep the listing both up to date and as accurate as possible. This means that from time to time plants and butterflies are added to (or taken from) the lists as new information becomes available.

This information comes primarily from our members' personal observations. In addition listings are incorporated from the recent published literature – for example see Murdoch de Baar article this issue. There also is an endeavour to reassess some of the earlier historical records and attempts are made to re-evaluate same using recent observations and experimental rearing techniques.

One problem with inaccurate or erroneous records is the difficulty in repealing them unless there is substantial proof of their invalidity. Thus we employ a system of qualifying records with terms such as “needs confirmation”, or the words “probably” and “possibly”.

In the records below entries include errors and inadvertant omissions in the revised booklet. The other two main categories are clarifications and new information. Page numbers refer to the (current) April 2005 revised edition. In addition, included with this newsletter is a loose-leaf revised printing of pages 50 and 51 of the green book, as we have recently noticed a computer “glitch” – transposition and recombination errors on these two pages. Those who have a copy of the revised edition can simply paste this over the relevant pages.

We welcome any new observations (published or not) as well as any other relevant comments and feedback.

*John T. Moss*

### Errors/Omissions:

- p.16 *Pipturus argenteus* – add Indigo Flash (*Rapala varuna*). Ref: Murdoch de Baar – News Bulletin Ent. Soc. Qld. Vol.27 No. 9 2000 – BOIC Newsletter No. 19 Dec. 2000



- p. 31 *Amyema miquelii* – add Trident Pencilled-blue (*Candalides margarita*). Ref: Michael Braby – Butterflies of Australia – Field Guide. 2004
- p.39 Between Danaid Eggfly and Dark Pencilled-blue insert “Dark Grass Blue see Spotted Grass-blue”
- p.43 Under Lilac Grass-skipper – *Oplismenus* – add page no. 25  
Under Lurcher – *Hemigraphis* – add page no. 20
- p.44 Under Orange Bushbrown – *Oplismenus* – add page no. 25
- p.50 Under White-brand Grass Skipper – delete 5 plant entries (i.e. 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup>) and add last 3 plant entries from Yellow Albatross on p.51 giving *Oplismenus* page no. 25
- p.51 Under Wide-brand Grass-dart – add *Sorghum verticilliflorum*. Ref: Braby, 2000  
Under Yellow Albatross – delete last 3 plant entries and add *Mallotus claoxyloides* (possibly)

### New Information and Clarifications:

- p.11 *Albizia lebbek* (all butterflies listed). add *A. procera* with *A. retusa* – Tailed Emperor (only). Ref: P. Hendry, Sheldon Q., 2006  
add *A. julibrissin* – Large Grass-yellow. Ref: J. Moss and R. Kendall at Mole River Nursery via Tenterfield NSW – date in 2005/6
- p.12 *Alectryon tomentosus* – add Indigo Flash (*Rapala varuna*). Ref: M. de Baar, BOIC Newsletter No. 45 June, 2007
- p.14 *Cupaniopsis anacardioides* – add Indigo Flash (*Rapala varuna*). Ref: H Schwencke and T. Blazely, BOIC Newsletter No. 39 Dec., 2005
- p.18 *Senna sulfurea* – substitute “probably” for “possibly”
- p.22 *Carex polyantha* – Southern Sedge-darter confirmed (but *C. gaudichaudiana* still unconfirmed). Ref. F. Jordan, BOIC Newsletter No. 44 March, 2007, J. Moss BOIC Newsletter No. 45 June, 2007
- p.22 *C. gaudichaudiana* – White Grass-dart – only
- p.27 *Aristolochia* species D’Aguilar Range, otherwise known as *Aristolochia* species affinity *pubera* (hostplant for the Clearwing Swallowtail aka Big Greasy) has been formally described by Estelle M. Ross as *A. meridionalis* (see Flora of Australia Vol.2:2007)
- p.32 · *Ogyris aenone* entry under both *Dendrophthoe vitellina* and *Diplatia furcata* – add “in North Qld.” and  
· *Diplatia furcata* – add to listing “Satin Azure, *Ogyris amaryllis hewitsoni*”. Ref: Hendry and Moss, BOIC Newsletter No. 41 June, 2006
- p.33 · *Lysiana maritima* – delete Satin Azure. Ref: Hendry and Moss, BOIC Newsletter No. 41 June, 2006  
· Northern or Scarlet Jezebel (*Delias argenthona*) confirmed. Ref: K. Dunn, Maroochydore, 14<sup>th</sup> April, 2007 (pers. comm.). [J.T. Moss has seen the empty pupal cases]



- p.39 Under Coral Jewel – insert *Glochidion ferdinandi*. Ref: A. Atkins, News Bulletin Ent. Soc. Qld., June 2004
- p.40 Under Eastern Dusk-flat – insert *Glochidion sumatranum*. Ref: G. Clemenson, Ningi Qld., 2005/6 (pers. comm.)
- p.42 · Under Indigo Flash – add *Alectryon tomentosus*, *Pipturus argenteus* and *Cupaniopsis anacardioides* (see refs. above)  
· Under Large Grass-yellow – add *Albizia julibrissin* and *Senna sulfurea* [probably]
- p.44 Under Orange Migrant – *S. sulfurea* change “possibly” to “probably”
- p.45 Under Ornate Dusk-flat – add *Xanthostemon chrysanthus*. Ref: G. Clemenson, Ningi Qld, 2005/6 (pers. comm.)
- p.46 Under Satin Azure – delete *Lysiana maritima* and add *Diplatia furcata* (see ref. above)
- p.48 · Under Southern Sedge-darter – delete possibly (see ref. above)  
· Under Spotted Grass-blue – add *Medicago lupulina*. Ref: W. Jenkinson, Beaudesert Qld. (pers. comm.) Plant identification confirmed by J.T. Moss at the Queensland Herbarium

### IN THE GARDEN WITH PETER

The life of a caterpillar is fraught with danger. This poor chap succumbed to an assassin bug. Assassin bugs are members of the Reduviidae family of insects. They are predatory and feed on other insects and some animals. They grab their prey with their forelegs, pierce it with their rostrum, inject an enzyme to dissolve its internal tissue and then suck the poor fellow dry. Some assassin bugs hang around in spider webs and steal the catch of the day. Others hang outside termite nests and stick their mouthparts through the walls of the nest to catch their prey. Some are blood suckers and in Central and South America are a cause of Chagas' Disease. In Australia they are not known to transfer any diseases, however if carelessly handled, bites may be extremely painful.



I have not been able to put a specific name to the fellow (any takers?). The caterpillar is that of a Monarch butterfly *Danaus plexippus*.

**Peter Hendry**



## SEED BANK NEWS

We have a quantity of various butterfly host plant seeds available (see previous newsletters). Seeds are available by sending two 50c postage stamps to BOIC Seed Bank Curator, 140 Henderson Road, Sheldon 4157. Please supply your name and address and which seeds you require. Let us know if there are specific seeds or plants you require and we may be able to help you.

## ADS. AND EXCHANGES

Newcomer to Entomology, anxious to learn, would welcome any surplus specimens that members would have available for free or small cost. Anything offered would be gratefully received and of course anything offered from around the Brisbane area would be collected personally.

Peter Barclay ph. 07 55022 022 or E/MAIL [pbar7389@bigpond.com.au](mailto:pbar7389@bigpond.com.au)

## WORLD WIDE WEBSITES TO WATCH

Paul Brock's phasmid site - <http://phasmida.orthoptera.org>

## BACK ISSUES

Back Issues of the Club Newsletter are available at a cost of \$2 each plus postage (1-2 copies \$1.10 - 3-6 copies \$1.50).

## JON'S FRENCH BUTTERFLIES

Well done Steve Curle, Trevor Lambkin, Deniss Reeves, Alan Hyman and John Moss. You all agreed on the identification of photos of the European butterflies depicted in the March issue. They were:

Photo 1 – Red Admiral (*Vanessa atalanta*)

Photo 2 - Nettle-tree Butterfly (*Libythea celtis*)

Photo 3 – Large Tortoiseshell (*Nymphalis polychloros*)

Photo 4 - Scarce Swallowtail (*Iphiclides podalirius*).

Thank you for your identification.

For the next issue Jon has supplied us with some New Caledonian butterfly photos with which to test you.



## BUTTERFLY AND OTHER INVERTEBRATES CLUB PROGRAMME

### **Planning and Management Meeting – all members welcome**

**What:** Our planning meetings are informative and interesting. As well as planning our activities we share lots of information. All members are welcome as this activity is also a general meeting of members. This meeting will be followed by a BYO (meat only, salad will be provided) BBQ and viewing of butterfly videos. See some beautiful butterflies from around the world in living colour.

**When:** Saturday, 11<sup>th</sup> August from 2 pm

**Where:** At Sheldon, exact address will be advised on RSVP

**Contact:** Peter on 3206 0048 email bevyjoy@digisurf.com.au or Daphne on 3396 6334 email bowden@itconnect.net.au to RSVP or for more details

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### **Society for Growing Australian Plants (Qld. Region). - celebrating 50 years of promoting Australian plants**

**Weekend of 15<sup>th</sup> and 16<sup>th</sup> September** - As usual our club will participate in this regular happening, and, as before we will be having an informational/promotional stall. Venue is Auditorium, Mt. Coot-tha (Brisbane) Botanic Gardens, Mt. Coot-tha Road, Toowong. Any members willing to help with setting up, manning or dismantling would be welcome. Please ring Daphne for details 07 3396 6334 or email bowden@itconnect.net.au. Members looking for butterfly/moth hostplants may find something interesting amongst the plants for sale. There is also a good bookstall and SGAP price their stock below standard retail RRP.

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### **Picnic in the Bush at Eprapah**

**What:** We propose a walk around the arboretum and butterfly gardens. We will be observing the progress of butterfly hostplants, in particular the recent Birdwing Butterfly Vine plantings in conjunction with the Richmond Birdwing Recovery Network. Bring your lunch which we can have as a picnic at one of several suitable sites on the property. Insect repellent will be provided if necessary. If time permits we may visit the Swordgrass Brown butterfly translocation site at nearby Clay Gully.

**When:** Saturday, 22<sup>nd</sup> September – meet at 10am

**Where:** Meet at the Mungara building on the scout property, corner of Cleveland-Redland Bay Road and Colburn Avenue, Victoria Point.

**Contact:** John Moss 3245 2997 (and on the day 04 2759 6753)

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**If you plan to attend one of the above events, please contact the person indicated in case, for some unforeseen circumstance, the event has had to be postponed or cancelled**



#### DISCLAIMER

The Newsletter seeks to be as scientifically accurate as possible but the views, opinions and observations expressed are those of the authors. The Newsletter is a platform for people to express their views and observations. These are not necessarily those of the BOIC. If inaccuracies have inadvertently occurred and are brought to our attention we will seek to correct them in future editions. The Editor reserves the right to refuse to print any matter which is unsuitable, inappropriate or objectionable and to make nomenclature changes as appropriate.

#### ACKNOWLEDGMENTS

Producing this newsletter is done with the efforts of:

- Those members who have sent in letters and articles
- Lois Hughes who provides illustrations including the cover
- Daphne Bowden who works on layout, production and distribution
- John Moss, Martyn Robinson and Dr. Geoff Monteith for scientific referencing and proof reading of various articles in this issue of the newsletter
- Helen Schwencke for conceiving the original idea for a Newsletter

We would like to thank all these people for their contribution.

#### ARE YOU A MEMBER

Please check your mailing label for the date your membership is due for renewal. If your membership is due, please renew as soon as possible.

**Membership fees are \$15.00 for individuals and \$20.00 for families, schools and organizations.**

**Would you please advise [bowden@itconnect.net.au](mailto:bowden@itconnect.net.au) if you get or change an email address.**

Butterfly and Other Invertebrates Club Inc.  
PO Box 2113  
RUNCORN Q. 4113

**Next event — Planning Meeting, BBQ and viewing butterfly videos – Saturday 11<sup>th</sup> August - See BOIC Programme for details**

